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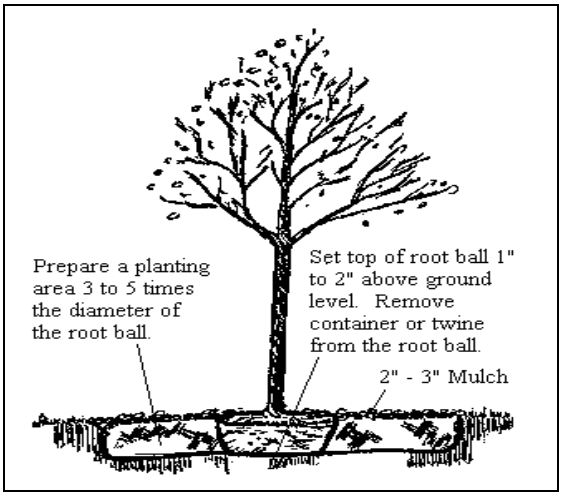
Tree Planting in Urban and Suburban Areas - Technical Note

Tree planting in residential subdivisions and along urban streets requires special considerations. Soil, stripped and re-spread by heavy equipment, becomes nearly as dense as concrete. Several techniques to mitigate these compacted conditions have been developed over the last twenty years. Some have increased the success and longevity of trees better than others have. This report provides an overview of these techniques and suggests additional improvements.

Tree Planting in Suburban Yards -

The American Forestry Association recommends the following planting techniques when planting trees in suburban yards:

- Use a roto-tiller or shovel to loosen and mix the soil in an area three to five times the diameter, and equal to the depth of the root ball. If the soil is lacking organic matter, add and mix during this operation.
- Dig a hole in the center of the prepared area three times the diameter of, and slightly shallower than (1" – 2") the root ball.
- Set the tree in the hole on solid ground. Cut any wires or rope securing the burlap around the root ball. If they can not be removed from the hole, pull them back so they can be buried later. (If the tree is in a container, cut and remove before placing in the pit.)
- For container grown trees, check that no encircling roots are present. If roots appear to have circled the container, separate and spread them into the planting hole.
- After placed in the hole, the top of the root ball should be about an inch above the surrounding soil. In most suburban housing sites where the soil is silt or clay loam, plant the tree so that the top of the rootball is one to two inches above the surrounding soil.
- Position the tree's main stem so that it is perpendicular to the ground and fill in the hole. In most urban subdivision sites, it may be necessary to add additional organic matter to the soil backfill. It is important to use some of the original excavation in the soil mix. This helps eliminate vast differences in growing medium and encourages roots to extend into the surrounding soil.
- As you add soil to fill in around the tree, gently tamp or add water to eliminate air pockets.
- Apply about two inches of mulch (shredded bark, wood chips, etc.) to cover the entire prepared area. Do not put mulch within six inches of the tree trunk.
- **DO NOT APPLY TRUNK WRAP** around the stem. Doing so creates favorable conditions for disease and good habitat for insects.
- **DO NOT STAKE THE TREE** unless planted in a windy area. Remove stakes and fasteners after one year. It is better to use strips of rubber to fasten the tree to stakes than wire placed within a section of hose.

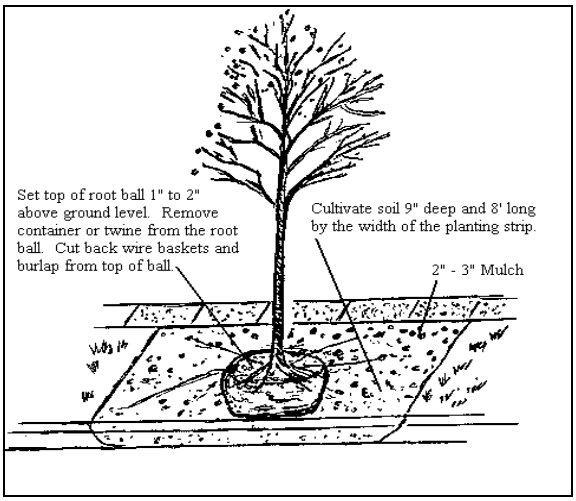


In many subdivisions, landscape contractors plant trees and shrubs in raised earthen mounds. They do this to increase success of the plantings. The potential problem with this practice occurs during periods of drought when these mounds dry out. Mounded soil should extend at least three feet form the edge of the root ball.

Tree Planting along Suburban Streets -

Planting a tree along suburban streets is much like planting in a backyard, except the prepared area is usually a rectangle, dictated

by the space available. It's recommended that the strip be a minimum of 5 feet wide and 8 feet long. Loosen the soil at least 9 inches or to the depth of the root ball. Plant the tree as described previously. Don't plant large trees under overhead power lines. Also, locate all underground utilities before excavating the planting pit.



Tree Planting in Urban Paving -

Planting in paved areas creates the greatest challenge for long term success. If replacing a dead tree within urban paving, always determine why the original tree died. When replanting, the larger the growing area, the better the chance for survival. If the planing pit dimensions do not exceed 30 square feet (length times width of unpaved area), investigate the possibility of cutting additional pavement.

Determine if drainage is adequate for tree growth. To test drainage, dig a small hole 10 inches in diameter and 12 inches deep in the pit and fill it with water. After it drains, fill it again and time how long it takes for the water to soak into the ground. One inch of drop per hour is the minimum drainage needed to support tree growth. If drainage is adequate, plant the tree as specified for suburban yards. If drainage is less than the minimum, excavate all of the soil in the tree pit to a depth of 24 to 30 inches. Install an aeration ring and drain sump. Construct a compacted earth mound to place the root ball on. This mound should be high enough so that the top of the root ball is 2 to 3 inches above the adjacent sidewalk. Fill in the pit with soil composed of the original excavated soil and amendments (such as organic matter, which should equal 6% of backfill by weight, or as recommended by a soil test). Finally, cover the pit with two inches of bark mulch.

Many urban renewal projects involve removal and replacement of existing concrete sidewalks in front of residential or commercial housing units. Quite often, when the new paving is installed, the subsoil and sub-base are compacted, leaving little or no area for tree root penetration. Nina Bassuk at the Urban Horticulture Institute, Cornell University has been experimenting with a soil mix that appears to be solving this problem.

When city sidewalks are being replaced, she recommends using a structural soil mixture under the paving. The soil is a mixture by weight of 6 parts of 1 to $1^1/_2$-inch gravel, to one part clay loam soil. Hydrogel (a material into which roots of bare root seedlings are dipped before planting), is a major component of the soil mix. The hydrogel helps the soil stick to the gravel and keep the ratios uniform. It also helps retain adequate water. The mixture can be compacted to 95% Proctor. This permits placing a concrete sidewalk or paving stones on the surface while providing ample space for both root growth and air and water filtration. This mixture is being evaluated on projects in New York City and Washington, D.C.